AST Premium 1000

Site Preparation and Hardware Installation Guide

AST Premium 1000

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Preface

What This Guide Contains

This guide contains site preparation and hardware installation instructions for the server.

Who Should Read This Guide

This guide is written for the person who selects and prepares the site and performs the initial system installation.

This guide does NOT document procedures for the operation, administration, or service of the system or its individual components. It also does NOT include the use of application software.

Conventions Used in This Guide

The following conventions are used throughout this guide:

- Acronyms are spelled out on first mention with the acronym in parentheses. Example: Small Computer System Interface (SCSI). Thereafter, the acronym is used throughout the guide.
- Operator input appears in **boldface** type.
- Menu selections are indicated by the > symbol. Example: The security screen is displayed by selecting **Advanced Menu>Setup>Security**. The symbol > indicates a sub-menu item.
- Book titles, directory names, file names, and variables appear in *italic* type.
- Numbered lists denote operations that must be performed in a specific order. Bulleted lists do not denote specific order.
- Text prefaced with the word **Note** indicates important information that might be overlooked or ignored.
- Text prefaced with the word **CAUTION** specifies actions that could result in the software's loss of integrity or failure.
- Text prefaced with the word **WARNING** specifies actions or conditions that could lead to serious bodily harm.

Documentation

The *Platform and Documentation CD-ROM* contains all related server documentation. The following guides are included in *.pdf* file format:

Title	Description
Product Guide	Contains information on the server architecture and operation.
Service Guide	Contains information on performing service tasks that require the removal of the server covers.
Site Preparation and Hardware Installation Guide	Contains site preparation and hardware installation instructions for the server.

Installation Overview and Site Preparation

This chapter describes the following:

- Sequence for Installing the Server
- Selecting a Site
- Preparing the Site

Sequence for Installing the Server

Step	Description	Reference
1	Select and prepare an appropriate site.	This chapter
2	Set up the hardware.	Chapter 2
3	Power on the server.	Chapter 3
4	Create system utility backup diskettes.	Chapter 3
5	Complete a preloaded operating system installation.	Chapter 3

Selecting a Site

The following table lists requirements you must consider when selecting the location for your server.

Site Requirements

Requirement	Description
Near grounded, three-pronged power outlet	United States and Canada: NEMA 5–15R outlet for 100–120 Vac or NEMA 6–15R outlet for 200–240 Vac.
	Other international sites: three-pronged outlet applicable for the electrical code of the region. See Chapter 2 for information on power cord and receptacle standards for all countries.
	CAUTION: Verify that the power service connection is through a properly grounded AC outlet.
Environmental quality	Choose an area that is clean, relatively free of excess dust, and well ventilated. Keep the front and rear ventilation openings free of obstructions. Keep the server away from sources of heat, vibration, and physical shock. (See "Shock" limits later in this chapter.)
Electromagnetic fields and electrical noise	Isolate the server from strong electromagnetic fields and electrical noise produced by electrical devices (such as elevators, copy machines, air conditioners, large fans, large electric motors, radio and TV transmitters, and high frequency security devices).
Clearance for cooling	Provide sufficient clearance behind and around the server to ensure proper cooling and airflow. Keep the ventilation openings on the server free of obstructions. Allow about 31 centimeters (12.2 inches) of clearance in back of the server, 60 centimeters (23.6 inches) on the sides, and 22 centimeters (9 inches) in front of the server.
Room for maintenance	Plan access space for server maintenance as needed.
	Make sure there is convenient access to disconnect the AC power cords from wall outlets or from the power supplies. Disconnecting the cords is the main way to turn off power to the server before doing maintenance or upgrade procedures. Pressing the DC push-button on/off power switch on the front panel of the server does NOT turn off system AC power.

Preparing the Site

This section provides information you need in order to prepare the site for your server. It includes the following:

- Physical Dimensions
- Installation and Service Clearances
- Heat Specifications
- Environmental Requirements
- Grounding Requirements
- Telephone Line Requirements

Physical Dimensions

The following table lists the physical dimensions of the server.

Dimension	Value
Height	20.41 in./51.84 cm
Width	9.34 in./23.72 cm
Depth	18.85 in./47.88 cm
Minimum configuration installed weight	38 lb/17.1 kg
Maximum configuration installed weight	43.5 lb/19.77 kg

Installation and Service Clearances

The following table lists the installation and service clearances for the server.

Side	Required Clearance
Top	N/A
Front	9 in./22 cm
Right side	23.6 in./60 cm
Left side	23.6 in./60 cm
Rear	12.2 in./31 cm

Heat Specifications

A fully configured server generates 4098 BTUs.

Environmental Requirements

The following table lists the environmental requirements for the server.

Temperature	
Non-operating	–55° to 150° C (–67° to 302° F)
Operating	5° to 50° C (41° to 122° F)
Humidity	
Non-operating	95% relative humidity (non-condensing) at 30° C (86° F)
Operating wet bulb	Not to exceed 33° C (91.4° F) (with diskette drive or hard disk drive)
Shock	
Non-operating	20 g, 11 msec, trapezoidal
Operating	2.0 g, 11 msec, 1/2 sine
Acoustic noise	Typically <45 dBA at 18° to 24° C (65° to 75° F) with five internal hard disk drives (measured at 1 meter from the system with the peripherals idle). The noise of the variable-speed system fan will increase with temperature and power load. **Your selection of peripherals may change the noise level.**
Electrostatic discharge (ESD)	Tested to 20 kilovolts (kV); no component damage
AC input power	
100–120 V~	100–120 V~, 7.0 A, 50/60 Hz
200–240 V~	200–240 V~, 3.5 A, 50/60 Hz

Grounding Requirements

The server grounding requirements are as follows:

- A dedicated circuit is not required.
- An insulated ground wire is required.
- The insulated grounding source must be from a building ground source.

The following table lists the absolute maximum voltage ratings with respect to ground.

Voltage	Rating
Voltage on any signal	-0.3V to V_{DD} + 0.3V (V_{DD} means supply voltage for the device)
3.3V Supply Voltage	-0.3V to 3.63V
5V Supply Voltage	-0.3V to 5.5V

Telephone Line Requirements

The following table lists the telephone line requirements for the modem.

Requirement	Description
Dial-up lines	Public Switch Telephone Network (PSTN)
Modular line jack	RJ11 (US only)

Setting Up the Hardware

Overview

The tasks in this chapter include how to do basic system setup:

- Check the Power Cord
- Add Internal Components
- Connect External Devices

Check the Power Cord

WARNING: Do not modify or use a supplied AC power cord if it is not the exact type required in the region where the server will be installed and used. Replace the cord with the correct type. Refer to the power cord requirements described in the table below.

WARNING: Do not plug in the AC power cord yet if you will be installing internal components (boards, dual in-line memory modules (DIMMs), removable media drives, etc.).

Power Cord Requirements

Power Cord Requirements	Description
Rating	The cord must be rated for the available AC voltage and have a current rating that is at least 125% of the current rating of the server.
Connector, wall-outlet end	The cord must be terminated in a grounding-type male plug designed for use in your region. It must have certification marks showing certification by an agency acceptable in your region.
Connector, power-supply end	The connector that plugs into the AC input connector on the server power supply must be an IEC 320, sheet C13, type female connector.
Cord length and flexibility	The cord must be less than 4.5 meters (14.76 feet) long, and it must be flexible <harmonized (HAR)> cord or VDE-certified cordage to comply with the server's safety certifications.

Surge Suppressor Recommended

In geographic regions that are susceptible to electrical storms, we highly recommend that you plug the server into a surge suppressor.

Electromagnetic Interference (EMI) Information

For information about complying with EMI regulations, see "Electromagnetic Compatibility" in Appendix A of the *Product Guide*.

Add Internal Components

WARNING: Before adding internal components to your server, verify that the server is not plugged in. The AC power cord must be disconnected.

Install any desired drives, add-in boards, and memory in the server by following the instructions in the documentation included with the component(s) being installed. Then replace all server covers.

Connect External Devices

WARNING: Before connecting external devices to your server, verify that the server is not plugged in; otherwise, equipment may be damaged.

After you have installed all the desired internal components and replaced the server covers, connect your keyboard, mouse, monitor, and other external devices by following the instructions in the documentation included with the device(s) being connected. Refer to Figure 2-1 for the connector locations on the back panel.

Note: You must install a monitor and keyboard in order to configure the system. You must do this even if your server will normally operate without a monitor or keyboard as a network server. You can choose to remove the monitor and keyboard after you have run the System Setup Utility (SSU), described in Chapter 4 of the *Product Guide*.

Figure 2-1. Back Panel Connectors and Features
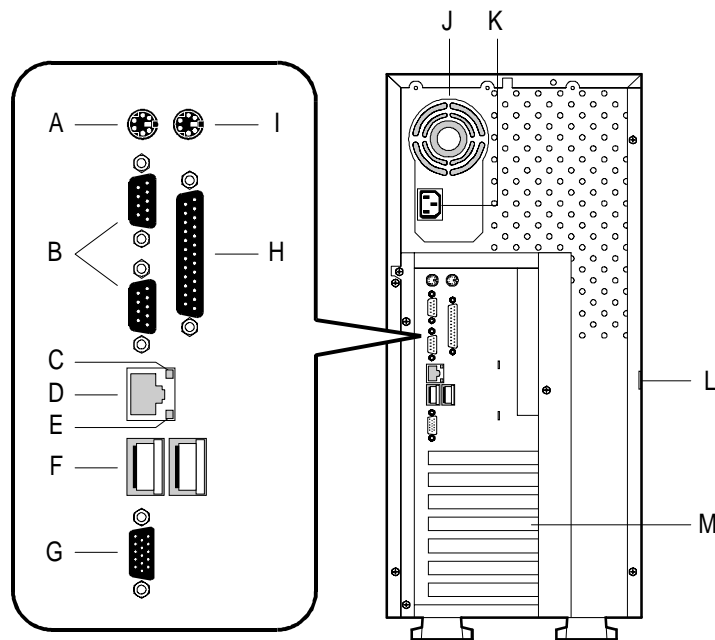
A   Keyboard connector

B   Serial port connectors

C   Green Network Interface Controller (NIC) LED

D   Network connector

E   Orange NIC LED

F   USB connectors

G   VGA connector

H   Parallel port connector

I   Mouse connector

J   Power-supply fan

K   AC input connector

L   Loop for padlock (padlock not supplied)

M   Slot covers

NIC LEDs

NIC LED Color	Status	Description
Orange	● On	The network controller is operating at 100 Mbps transfer speed.
	○ Off	The network controller is operating at 10 Mbps transfer speed.
Green	● On	Valid link to the LAN. The network controller and hub are receiving power and the cable connection between the controller and hub is good. There is no network traffic.
	✴ Blinking	Valid link to the LAN. Data is being sent or received.
	○ Off	The controller and hub are not receiving power, the cable connection between the controller and hub is faulty, or there is a driver configuration problem.

Powering on the Server

After you complete the hardware setup, you are ready to power on the server and continue with the installation. Follow the procedures in this chapter to:

- Power on the Server the First Time
- Create System Utility Backup Diskettes

## Power on the Server the First Time

WARNING: The push-button power switch on the front panel does NOT turn off the system AC power.

To turn on your server:

1. Make sure all external devices, such as a monitor, keyboard, and mouse, are connected.

2. Remove the drive protection card (if present) from the diskette drive and the tape drive.

3. Turn on the video monitor.

4. Plug the female end of the AC power cord into the AC input connector on the back panel. Refer to Figure 2-1 in Chapter 2 for the location of this connector.

5. Plug the male end of the AC power cord into a grounded, three-pronged power outlet.

   - In the United States and Canada, this means an NEMA 5-15R outlet for 100-120 Vac or an NEMA 6-15R outlet for 200-240 Vac.

   - For international sites, this means a three-pronged power outlet applicable for the electrical code of the region. The anticipated overcurrent is 13 A or less.

6. If the server does not power on when you plug it into the AC outlet, press the push-button power switch on the front panel. Refer to Figure 3-1 for the location of this switch.

7. Verify that the power-on light (LED) on the front panel is lit. Refer to Figure 3-1 for the location of this LED.

After a few seconds, POST begins. See "Power-On Self Test (POST)" later in this chapter for more information. When a hard disk drive is accessed during POST, the hard drive activity light (LED) lights. Refer to Figure 3-1 for the location of this LED.

Figure 3-1. Front Panel Power Switch and LEDs

OM05084
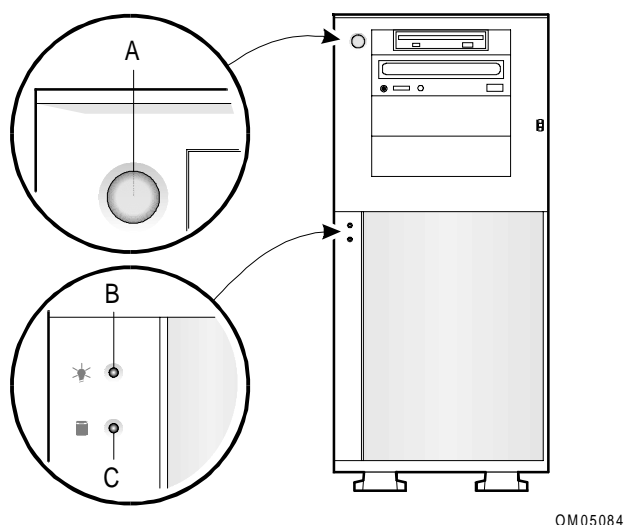
A	Push-button power switch
B	Power-on light (LED)
C	Hard drive activity light (LED)

Power-On Self Test (POST)

POST is stored in NVRAM, or flash memory, and runs automatically each time you power on or reboot the server. POST checks the system board, processor, memory, keyboard, and most installed peripheral devices.

1. Turn on your video monitor and system. After a few seconds POST begins to run.

2. After the memory test, these screen prompts and messages display:

   ```
   Press <F2> key if you want to run SETUP
   Keyboard.....Detected
   Mouse........Detected
   ```

3. If you do not press **F2** and do NOT have a device with an operating system loaded, the above message remains for a few seconds while the boot process continues, and the system beeps once. Then this message displays:

   ```
   Insert bootable media in the appropriate drive
   ```

   If you do not press **F2** and DO have an operating system loaded, the boot process continues, and this message displays:

   ```
   Press <Ctrl><C> to enter SCSI Utility
   ```

4. Press **Ctrl** + **C** if there are SCSI devices installed. When the utility opens, follow the displayed instructions to configure the onboard SCSI host adapter settings and to run the SCSI utilities. If you do not enter the SCSI utility, the boot process continues.

5. After POST completes, the system beeps once.

What displays on the screen after this depends on whether you have an operating system loaded and if so, which one.

If the system halts before POST completes running, it emits a beep code indicating a fatal system error that requires immediate attention. If POST can display a message on the video display screen, it causes the speaker to beep twice as the message displays.

Note the screen display and write down the beep code you hear. This information is useful for your service representative. For a listing of beep codes and error messages that POST can generate, see Chapter 3 of the *Service Guide*.

Boot the Operating Environment

When the BIOS POST process and the adapter BIOS scans complete, the system displays the following prompt:

```
Press <D> to boot Diagnostic Partition, <any other key> for normal boot
```

If an error is detected during the adapter BIOS scans, the following message displays:

```
Press <F1> for normal boot, <F2> for BIOS Setup
```

The following table lists your options in responding to the prompt.

If you…	Then…
Press the **D** key	The server boots to the Diagnostic Partition.
Do not respond to the prompt	The number counts down to 00 and then the system boots to the operating system environment.
	Note: Time to boot could be longer, depending on how memory test options are configured.

When the server performs a "normal boot," it boots the first device found in the Device Scan Order.

Note: If you do not receive the prompt described above, you need to reboot from the *Platform and Documentation CD–ROM* and install the Diagnostic Partition, which contains all the system utilities. For information on booting from the *Platform and Documentation CD–ROM*, see Chapter 3 of the *Product Guide*.

Create System Utility Backup Diskettes

After you power on the server, but **before** you install any application software, you should:

- Create a Backup of the SSU
- Create a Backup of the SSU Configuration
- Create a Backup of the BIOS Flash Utility

Note: Whenever you change your configuration, create a new set of SSU diskettes so that they reflect the updated configuration. If you upgrade the Diagnostic Partition, create a new set of SSU diskettes and a new backup BIOS Flash Utility diskette.

Create a Backup of the SSU

It is strongly recommended that you create a set of backup SSU diskettes. Backup SSU diskettes enable you to:

- Run the SSU from the backup diskettes if the Diagnostic Partition and *Platform and Documentation CD–ROM* are unavailable.
- Restore your current system configuration information.

When you create a set of backup SSU diskettes, the system copies the SSU and the current system configuration information to three diskettes. Therefore, we recommend that you create a new set of backup SSU diskettes each time you change your system configuration.

IMPORTANT: The backup SSU diskettes are to be used solely for data backup purposes. You are not authorized to copy the program files or to use these backup diskettes on any other system.

To boot from the *Platform and Documentation CD–ROM* and copy the SSU software to diskettes:

1. Open the CD-ROM tray by pressing the push-button open/close switch on the front of the CD-ROM drive. Refer to Figure 3-2 for the location of this switch.

   The tray slides out of the drive.

Figure 3-2. CD-ROM Drive Open/Close Switch and CD-ROM Tray
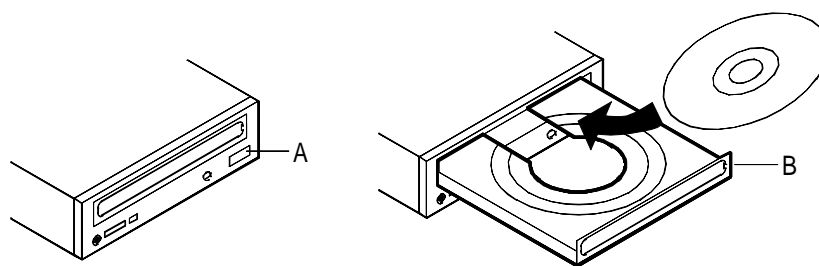
OM05063

A   Push-button open/close switch

B   CD-ROM tray, CD-ROM with label-side up

2. Open the *Platform and Documentation CD–ROM* case. Press down on the center hub of the case to release the CD-ROM.

    CAUTION: Handle the CD-ROM only by its inner and outer edges. Do not touch the data side of the CD-ROM (the side **without** the label).

3. Gently grasp the center hole and outer edge of the CD-ROM. Remove it from the case, and place it **label-side** up in the CD-ROM tray.

4. Press the push-button open/close switch, or gently push on the CD-ROM tray—it automatically slides into the drive.

5. Restart the server by pressing the server's push-button power switch located on its front panel, or by pressing **Ctrl** + **Alt** + **Del**.

    When POST completes, the server boots from the *Platform and Documentation CD–ROM* and displays the Main Menu.

6. Select **Configuration Utils>Create SSU Backup** and press **Enter**. Make sure you have several diskettes on hand.

7. Follow the onscreen instructions for creating a backup of the SSU onto diskettes. Make sure that you follow the instructions for naming the diskettes. Only the first one of the set is bootable.

8. When finished, go to the next procedure that creates a backup of the SSU system configuration file.

Create a Backup of the SSU Configuration

1. From the same *Platform and Documentation CD–ROM* Main Menu as in the previous procedure, select **Configuration Utils>Backup SSU Config** and press **Enter**.

2. Follow the onscreen instructions for creating a backup of the SSU system configuration onto diskette.

3. When finished, go to the next procedure that creates a backup BIOS Flash Utility diskette.

Create a Backup of the BIOS Flash Utility

CAUTION: Before undertaking a system BIOS update, you must create a backup BIOS Flash Utility diskette. If a power failure occurs during a system BIOS update, you will not be able to reboot your server from the Diagnostic Partition or the *Platform and Documentation CD–ROM*. Instead, you must use the backup BIOS Flash Utility diskette to boot your server and restore the BIOS.

IMPORTANT: The backup BIOS Flash Utility diskette is to be used solely for BIOS Flash backup purposes, in the event you need to perform a Flash recovery operation. You are not authorized to copy the program files or to use this backup diskette on any other system.

1. From the same *Platform and Documentation CD–ROM* Main Menu as in the previous procedure, select **Firmware Flash Utils>Create Flash Backup** and press **Enter**.

2. Follow the onscreen instructions for creating a backup BIOS Flash Utility diskette.

Using the Platform and Documentation CD-ROM

This chapter describes the following topics:

- Diagnostic Partition
- System Documentation
- Drivers and Adapter Documentation
- Intel LANDesk Server Manager

Warnings and Cautions

Read and observe all warnings, safety guidelines, and cautions in Appendix B.

Diagnostic Partition

The *Platform and Documentation CD-ROM* contains all of the Diagnostic Partition utilities and utilities for installing the Diagnostic Partition on the system boot drive.

The Diagnostic Partition contains maintenance utilities, such as the following:

- System and adapter diagnostics
- Configuration utility
- BIOS and firmware flash utilities
- Remote support utilities

For additional information about the Diagnostic Partition, refer to the *Product Guide;* a copy of which is on this CD-ROM.

System Documentation

The *Platform and Documentation CD-ROM* contains all related server documentation in the *cddrive:\docs* directory, where *cddrive:* is the drive letter. The following guides are included in *.pdf* file format:

Title	Description
Product Guide	Contains information on the server architecture and operation.
Service Guide	Contains information on performing service tasks that require the removal of the server covers.
Site Preparation and Hardware Installation Guide	Contains site preparation and hardware installation instructions for the server.

Adobe® Acrobat® Reader 3.01 must be installed in order to view these files. The Adobe Acrobat Reader is readily available or can be installed by typing:

cddrive:\acrobat\ar32e301.exe

where *cddrive:* is the drive letter.

Drivers and Adapter Documentation

The Feature Assistant utility contains drivers and documentation for supported adapters and peripherals. Located on the *Platform and Documentation CD-ROM*, it includes a graphical interface from which you can:

- Install software drivers
- View or print adapter documentation
- Search or browse the CD-ROM
- Make NT driver diskettes

Note: The Feature Assistant utility works with Microsoft Windows NT Server, Windows 95, and Windows 98. A Java-based utility provides a simple, intuitive tool for finding information about the features contained in the server.

To start the Feature Assistant utility, run the program, *runntfa.bat*, located in the *\fa* directory on the *Platform and Documentation CD-ROM*.

Requirements:

- Windows NT Server 4.0 with Service Pack 3 (or greater), Windows 95 or Windows 98
- Internet Explorer 4.0 or above

Note: To use earlier versions of Internet Explorer, you must install the Java virtual engine by running the program, msjavx86.*exe*, located in the *\fa* directory on the *Platform and Documentation CD-ROM*.

Intel LANDesk Server Manager

The *Platform and Documentation CD-ROM* contains Intel® LANDesk Server Manager® in the *cddrive:\landesk* directory where *cddrive:* is the drive letter.

LANDesk Server Manager documentation is in the *cddrive:\landesk\elecdocs* directory. The following guides are included in *.pdf* format:

Intel LANDesk Server Manager Installation Guide	Contains information about installing Intel LANDesk Server Manager
Intel LANDesk Server Manager Administrator's Guide	Contains information about using Intel LANDesk Server Manager

To Install LANDesk Server Manager, execute *cddrive:\landesk\setup.exe*, where *cddrive:* is the drive letter.

The registration number required to install Intel LANDesk is in the *readme.pdf* file in the *cddrive:\landesk\elecdocs* directory.

Safety Guidelines, Warnings, and Cautions

Refer to the following safety guidelines, warnings, and cautions when servicing your system.

Safety Guidelines and Warnings
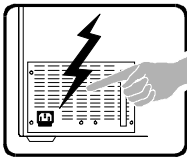
There are no user-serviceable parts inside the power supply. Servicing should be done by technically qualified personnel only. There may be more than one power supply in this product.

Hazardous voltage, current, and energy levels are present inside the power supply and the power distribution backplane.
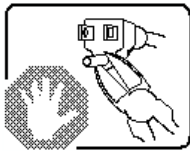
Do not attempt to modify or use the supplied AC power cord if it is not the exact type required.
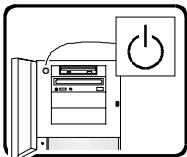
The push-button power switch on the front panel of the system DOES NOT turn off the system AC power. To remove AC power from the system, you must unplug the AC power cord from the system or the wall outlet.
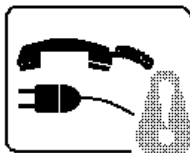
Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the system and disconnect the AC power cord, telecommunications systems, networks, and modems attached to the system before opening it. Otherwise, personal injury or equipment damage can result.

SAFETY STEPS: Whenever you remove the side and/or front covers to access the Inside of the system, follow these steps:

Turn off all peripheral devices connected to the system.

Turn off the system by pressing the push-button power switch on the front of the system.

Unplug the AC power cord from the system or the wall outlet.

Label and disconnect all cables connected to I/O connectors or ports on the back of the system.

Provide some electrostatic discharge (ESD) protection by wearing an anti-static wrist strap attached to the chassis ground—any unpainted metal surface on the system—when handling components.

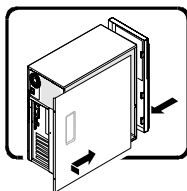Do not operate the system with the side and/or front covers removed.
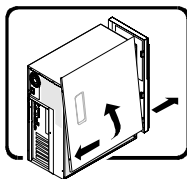
After you have completed the six SAFETY steps above, you can remove the front and/or side covers. To do this:

Unlock and remove the padlock from the back of the system if a padlock has been installed.

Remove and save all the screws from the covers.

Remove the covers.

For proper cooling and airflow, always reinstall the side and front covers before turning on the system. Operating the system without the covers in place can damage system parts. To install the covers:

Check first to make sure that you have not left any tools or loose parts inside the system.

Check that cables, expansion boards, and other components are properly installed.

Attach the covers to the chassis with the screws removed earlier, and tighten them firmly.

Insert and lock a padlock to the system cabinet to prevent unauthorized access inside the system.

Connect all external cables and the AC power cord to the system.
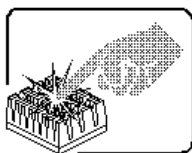
A processor and its heat sink may be hot if the system has been running. Also, there may be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.
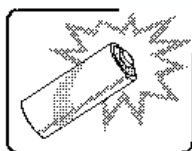
There is danger of an explosion if the battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the equipment manufacturer. Dispose of used batteries according to the manufacturer's instructions.
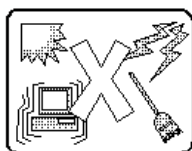
The system is designed to operate in a typical office environment. Choose a site that is:

Clean and free of airborne particles (other than normal room dust).

Well-ventilated and away from sources of heat, including direct sunlight.

Away from sources of vibration or physical shock.

Isolated from strong electromagnetic fields produced by electrical devices.

Provided with a properly grounded AC wall outlet.

Provided with sufficient space to access the power supply cords, because they serve as the system's main power disconnect.

In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm.

Cautions

Electrostatic Discharge (ESD)and ESD Protection	ESD can damage disk drives, boards, and other components. This system can withstand normal levels of environmental ESD while you are hot-swapping SCSI hard disk drives and power supplies. However, we recommend that you perform all procedures in this manual only at an ESD workstation. If one is not available, you can provide some ESD protection by wearing an anti-static wrist strap attached to the chassis ground—any unpainted metal surface on the system—when handling components.
Handling Boards and Modules	Boards and modules can be extremely sensitive to ESD and always require careful handling. After removing a board or module from its protective wrapper or from the system, place the board or module component-side UP on a grounded, static-free surface. If you place the system board on a conductive surface, the battery leads may short out. If they do, the battery charge is drained, resulting in a loss of CMOS data. Do not slide any boards or modules across any surfaces.
Cooling and Airflow	Operating the system with the side and front covers removed can damage the components inside it. For proper cooling and airflow, always replace the covers before turning on the system.
Battery	There is danger of an explosion if the battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the equipment manufacturer. Dispose of the used battery according to the manufacturer's instructions.

Cautions

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